

WHAT IS CLAIMED:

1. Method of operating a gas generating system for a fuel cell system, the gas generating system including a reformer for reforming hydrocarbons, at least one selective oxidation stage for the removal of carbon monoxide contained in the reformat, and at least one catalytic burner for the catalytic conversion of a fuel, the method comprising:

for the start of the operation of the gas generating system, in a warm-up phase, starting at least one of the catalytic burners using the generated heat for the evaporation of a combustion medium and/or water and for the heating-up of an additionally connected partial reforming unit or a connected partial oxidation stage;

by the reforming or partial oxidation, generating a hydrogen-containing gas flow for the fuel cell unit; and

in a phase following the heating-up phase, operating the fuel cell unit at reduced power.

2. Method according to Claim 1, further comprising heating the at least one catalytic burner, after the start, by electric power.

3. Method according to Claim 1, further comprising feeding hydrocarbons to be reformed or hydrogen from a hydrogen reservoir after the start as fuel to the at least one catalytic burner.

4. Method according to Claim 1, further comprising preheating at least one of the selective oxidation stages by an increased supply of air.

5. Method according to Claim 1, further comprising heating the at least one catalytic burner by the additional supply of air and/or fuel.

6. Method according to Claim 1, using hot gas from at least one of the reformer, the at least one selective oxidation stage, the at least one catalytic burner, and the fuel cell unit to heat at least one of the others.

7. Method according to Claim 1, providing at least one of an adiabatic catalytic burner, a flame burner having an electric starting device, and additional air and/or fuel supply, as a cold-starting component in front at least one of the reformer, the at least one selective oxidation stage, and the at least one catalytic burner.

8. Gas generating system for a fuel cell system, comprising:

a reformer for reforming hydrocarbons to produce reformat;

at least one selective oxidation stage for removal of carbon monoxide contained in the reformat;

at least one catalytic burner for the catalytic conversion of a fuel;

an evaporator for evaporation of at least one of hydrocarbons and water, the at least one catalytic burner being thermally coupled to the evaporator; and

at least one of a partial reforming unit and a partial oxidation stage for starting the gas generating system, wherein the at least one of the partial reforming unit and the partial oxidation stage is thermally coupled to the at least one catalytic burner

9. Gas generating system according to Claim 8, wherein the at least one catalytic burner is connected with a reservoir for one of hydrocarbons and hydrogen.

10. Gas generating system according to Claim 9, wherein the hydrocarbons are methanol.

11. Gas generating system according to Claim 8, wherein the at least one catalytic burner has an electric heating device.

12. Gas generating system according to Claim 8, further comprising at least one of a an adiabatic catalytic burner and a flame burner, wherein the at least one of the adiabatic catalytic burner and the flame burner is positioned as a cold-starting component in front of at least one of the reformer, the at least one selective oxidation stage and the at least one catalytic burner.

13. Gas generating system according to Claim 12, wherein the at least one of the adiabatic catalytic burner and the flame burner has at least one of an electric starting device and an air/fuel supply.

14. A method of operating a gas generating system for a fuel cell system, the method comprising:

starting at least one catalytic burner of the gas generating system to generate heat;

using the generated heat to evaporate at least one of a combustion medium and water;

when the system is not warmed up, heating at least one of a partial reforming unit and a partial oxidation stage and using the at least one of a partial reforming unit and a partial oxidation stage to generate a hydrogen-containing gas flow for the fuel cell unit using the evaporated at least one of a combustion medium and water; and

when the system is warmed up, using a reforming unit to generate a hydrogen-containing gas flow for the fuel cell unit using the evaporated at least one of a combustion medium and water, wherein the reforming unit has a higher capacity than the at least one of a partial reforming unit and a partial oxidation stage.

15. The method according to Claim 14 further comprising, when the system is not warmed up, heating the at least one catalytic burner using electric power.

16. The method according to Claim 14 further comprising, when the system is not warmed up, feeding, as fuel, at least one of hydrocarbons or hydrogen from a tank to the at least one catalytic burner.

17. The method according to Claim 14 further comprising, when the system is not warmed up, preheating at least one selective oxidation stage by an increased supply of air.

18. The method according to Claim 17 further comprising, when the system is not warmed up, heating the at least one catalytic burner by an increased supply of air or fuel.

19. The method according to Claim 17 further comprising at least one of an adiabatic catalytic burner or a flame burner, which is connected as a cold-stating component in front of at least one of the reformer, the at least one selective oxidation stage, and the at least one catalytic burner.

20. The method according to Claim 14 further comprising using hot gas from at least one of the reformer, the at least one selective oxidation stage, the at least one catalytic burner, and the fuel cell unit to heat at least one of the others.

21. A gas generating system for a fuel cell system, comprising:

a catalytic burner for the catalytic conversion of a fuel;

an evaporator for evaporating at least one of hydrocarbons and water, the catalytic burner being thermally coupled to the evaporator;

at least one of a partial reforming unit and a partial oxidation stage for use when the system temperature is below a normal operating range,

wherein the at least one of the partial reforming unit and the partial oxidation stage is thermally coupled to the at least one catalytic burner;

a reformer for reforming hydrocarbons to produce reformat, the reformer being used when the system temperature is within the normal operating range; and

at least one selective oxidation stage for removal of carbon monoxide contained in the reformat.

22. The gas generating system according to Claim 21,

wherein the catalytic burner is connected with a reservoir for one of hydrocarbons to be reformed and hydrogen.

23. The gas generating system according to Claim 21,

wherein the catalytic burner has an electric heating device.

24. The gas generating system according to Claim 21,

wherein at least one of an adiabatic catalytic burner or a flame burner is positioned in front of at least one of the reformer, the selective oxidation stage and the catalytic burner.